

Rules for Divisibility

- A number is divisible by **2** (is even) if it has a ones digit of 0, 2, 4, 6, or 8 (the ones digit is even), i.e. 2,398,23**8** and 731,95**6**.
- A number is divisible by **3** if the sum of the digits is divisible by 3,
i.e. $582 \Rightarrow 5 + 8 + 2 = 15 \Rightarrow 1 + 5 = 6$, 6 is divisible by 3 so 582 is divisible by 3.
- A number is divisible by **4** if the number named by the last two digits is divisible by 4, i.e. 15,354,1**16** since 16 is divisible by 4, so is 15,354,116.
- A number is divisible by **5** if the ones digit is 0 or 5, i.e. 468,574,32**0** and 351,63**5**.
- A number is divisible by **6** if it is divisible by 2 and 3, i.e. 2,35**8** \Rightarrow 8 is even, so 2,358 is divisible by 2 and $2 + 3 + 5 + 8 = 18 \Rightarrow 1 + 8 = 9$, 9 is divisible by 3 so 2,358 is divisible by 3. Since 2,358 is divisible by 2 and 3, it is divisible by 6.
- A number is divisible by **7** if the last digit doubled and subtracted from the rest of the number is divisible by 7, i.e. $2135 \Rightarrow 5 * 2 = 10 \Rightarrow 213 - 10 = 203 \Rightarrow 3 * 2 = 6 \Rightarrow 20 - 6 = 14$ since 14 is divisible by 7 so is 2135.
- A number is divisible by **8** if the number named by the last three digits is divisible by 8, i.e. 96,0**88** since 088 is divisible by 8 so is 96,088.
- A number is divisible by **9** if the sum of the digits is divisible by 9,
i.e. $9,648 \Rightarrow 9 + 6 + 4 + 8 = 27 \Rightarrow 2 + 7 = 9$, so 9,648 is divisible by 9.
- A number is divisible by **10** if the ones digit is 0, i.e. 2,165,41**0** and 321,654,98**0**

- A number is divisible by **11** if the last number subtracted from the rest, repeated gives 0 or every other number added together is equal the rest of the numbers added together, i.e. $2,438,678 \Rightarrow 243,867 - 8 = 243,859 \Rightarrow 24,385 - 9 = 24,376 \Rightarrow 2,437 - 6 = 2,431 \Rightarrow 243 - 1 = 242 \Rightarrow 24 - 2 = 22 \Rightarrow 2 - 2 = 0$ so $2,438,678 = 221,678 * 11$
Or $2 + 3 + 6 + 8 = 19$ and $4 + 8 + 7 = 19$.
- A number is divisible by **12** if it is divisible by 3 and 4, i.e. **144** since 44 is divisible by 4 so is 144 and $144 \Rightarrow 1 + 4 + 4 = 9$ since 9 is divisible by 3 so is 144. Since 144 is divisible by 3 and 4, it is divisible by 12.
- A number is divisible by **13** if the last digit multiplied by 9 and subtracted from the rest is divisible 13, i.e.
 $2184 \Rightarrow 4 * 9 = 36 \Rightarrow 218 - 36 = 182 \Rightarrow 2 * 9 = 18 \Rightarrow 18 - 18 = 0$, since 0 is divisible by everything it is divisible by 13. So 2184 is divisible by 13.
- A number is divisible by **14** if it is divisible by 2 and 7, i.e. **336** $\Rightarrow 6$ is even, so 336 is divisible by 2 and $336 \Rightarrow 6 * 2 = 12 \Rightarrow 33 - 12 = 21$ since 21 is divisible by 7 so is 336. Since 336 is divisible by 2 and 7 it is divisible by 14.